

WHAT IS CLAIMED IS:

1                   1.       A method for searching for an entry in a plurality of entries in a data  
2 structure, the method comprising:  
3                   determining an entry point for the data structure;  
4                   determining a first entry in the plurality of entries corresponding to the entry  
5 point;  
6                   determining if the first entry corresponds to a key used to determine the entry  
7 point;  
8                   if the first entry does not correspond to the key, using information in the first  
9 entry to determine a second entry in the data structure for the key; and  
10                  if the first entry corresponds to the key, performing an action associated with  
11 the first entry.

1                   2.       The method of claim 1, further comprising:  
2                   determining if the second entry corresponds to the key; and  
3                   if the second entry does not correspond to the key, using information in the  
4 second entry to determine a third entry in the data structure.

1                   3.       The method of claim 1, wherein the first entry comprises a plurality of  
2 branches, wherein the information is used to determine which branch to search in for the  
3 second entry.

1                   4.       The method of claim 3, wherein the plurality of branches comprise  
2 three or more branches.

1                   5.       The method of claim 1, wherein the entry point is a hash result of the  
2 key and the entry comprises an entry key, the entry key used to determine if the entry  
3 corresponds to the key by comparing the entry key to the key to determine if the entry key  
4 matches the key.

1                   6.       The method of claim 1, wherein the information comprises a plurality  
2 of hints, wherein a hint in the plurality of hints corresponds to information associated with the  
3 key.

1                   7.       The method of claim 6, wherein the plurality of hints comprise pointers  
2 to entries in the data structure, wherein the hint comprises a pointer to the second entry.

1                   8.       The method of claim 6, wherein each hint is associated with a branch  
2 in a plurality of branches associated with the first entry.

1                   9.       The method of claim 1, wherein performing the action comprises at  
2 least one of retrieving information from the first entry, updating information in the first entry,  
3 and deleting information in the first entry.

1                   10.      The method of claim 1, wherein the data structure comprises a linked  
2 list, wherein the first entry is a parent node and the second entry is a child node to the first  
3 entry in the data structure.

1                   11.      The method of claim 1, wherein determining the entry point comprises:  
2 determining a hash result for the key; and  
3 using the hash result to determine the first entry corresponding to the entry  
4 point.

1                   12.      A method for searching a data structure, the method comprising:  
2 hashing a search key to generate a hash result;  
3 determining a first entry in a plurality of entries in the data structure using the  
4 hash result;  
5 determining if the first entry corresponds to the search key;  
6 if the first entry does not correspond to the search key, using information in  
7 the first entry to determine a second entry in the data structure, the second entry included in a  
8 branch one or more branches associated with the first entry; and  
9 if the first entry does correspond to the search key, performing an action  
10 associated with the first entry.

1                   13.      The method of claim 12, further comprising:  
2 determining if the second entry corresponds to the search key; and  
3 if the second entry does not correspond to the search key, using information in  
4 the second entry to determine a third entry in the data structure, the third entry included in  
5 one or more branches associated with the second entry.

1                   14.     The method of claim 13, further comprising if the second entry does  
2 correspond to the search key, performing an action associated with the second entry.

1                   15.     The method of claim 13, wherein using the information in the first  
2 entry to determine the second entry comprises comparing the information in the first entry to  
3 at least a first part of the search key to determine if the information in the first entry matches  
4 the at least the first part of the search key.

1                   16.     The method of claim 15, wherein using the information in the second  
2 entry to determine the third entry comprises comparing the information in the second entry to  
3 at least a second part of the search key to determine if the information in the second entry  
4 matches the at least the second part of the search key, the at least the second part of the search  
5 key being different than the at least a first part of the search key.

1                   17.     The method of claim 12, wherein determining if the first entry  
2 corresponds to the search key comprises comparing an entry key in the entry to the search  
3 key to determine if the first entry matches to the search key.

1                   18.     The method of claim 12, wherein the information is used to determine  
2 which branch in the one or more branches associated with the first entry to search in for the  
3 second entry.

1                   19.     The method of claim 12, wherein performing the action comprises at  
2 least one of retrieving information from the first entry, updating information in the first entry,  
3 and deleting information in the first entry.

1                   20.     The method of claim 12, wherein the information comprises a plurality  
2 of hints, wherein a hint in the plurality of hints corresponds to information associated with the  
3 search key and points to the second entry.

1                   21.     The method of claim 20, wherein each hint is associated with a branch  
2 in the one or more branches associated with the first entry.

1                   22.     The method of claim 12, wherein the data structure comprises a linked  
2 list, wherein the first entry is a parent node and the second entry is a child node to the first  
3 entry in the data structure.

1                   23.     A method for searching a data structure, the method comprising:  
2                   (a) hashing a search key to generate a hash result;  
3                   (b) determining an entry in a plurality of entries in the data structure using the  
4 hash result;  
5                   (c) determining if an entry key in the entry corresponds to the search key;  
6                   (d) if the entry key does not correspond to the search key, repeating step (c)  
7 using a subsequent entry until the entry key from the subsequent entry corresponds to the  
8 search key, wherein the subsequent entry is determined using information in the entry; and  
9                   (e) if the entry key does correspond to the search key, performing an action  
10 associated with the entry.

1                   24.     The method of claim 23, wherein the subsequent entry is determined  
2 by comparing information in the search key to information in the entry to determine if the  
3 information in the search key matches the information in the entry.

1                   25.     The method of claim 23, wherein as step (c) is repeated using a first  
2 subsequent entry and a second subsequent entry, different information in the search key is  
3 used to determine the second subsequent entry than was used in determining the first  
4 subsequent entry.

1                   26.     The method of claim 23, wherein the data structure comprises a linked  
2 list, wherein the entry comprises a parent node and the subsequent entry comprises a child  
3 node in the linked list.

1                   27.     The method of claim 23, wherein performing the action comprises at  
2 least one of retrieving information from the first entry, updating information in the first entry,  
3 and deleting information in the first entry.

1                   28.     The method of claim 23, wherein the information comprises a plurality  
2 of hints, wherein a hint in the plurality of hints corresponds to information associated with the  
3 key and points to the subsequent entry.

1                   29.     The method of claim 28, wherein each hint is associated with a branch  
2 in one or more branches associated with the entry.

1                    30.     A method for searching for an entry in a plurality of entries in a data  
2 structure, the method comprising:  
3                    receiving a data frame from a storage network;  
4                    determining a search key for the data structure using information in the data  
5 frame;  
6                    hashing the search key to generate a hash result;  
7                    determining a first entry in the plurality of entries corresponding to the hash  
8 result;  
9                    determining if the first entry corresponds to the search key;  
10                  if the first entry does not correspond to the search key, using information in  
11 the first entry to determine a second entry in the data structure; and  
12                  if the first entry corresponds to the search key, retrieving an address for a  
13 storage device found in the first entry.

1                    31.     The method of claim 30, further comprising:  
2                    determining if the second entry corresponds to the search key; and  
3                    if the second entry does not correspond to the key, using information in the  
4 second entry to determine a third entry in the data structure, the third entry included in one or  
5 more branches associated with the second entry.

1                    32.     The method of claim 31, further comprising writing the address to the  
2 data frame, wherein the address is used to perform an action with the storage device at the  
3 address.

1                    33.     The method of claim 32, wherein the action comprising at least one of  
2 writing, erasing, and updating information at the address in the storage device using  
3 information in the data frame.